AGRICULTURAL PEAK LOAD REDUCTION PROGRAM

PROGRAM DESCRIPTION

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California State University Fresno

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IRRIGATION TRAINING AND RESEARCH CENTER

California Polytechnic State University
San Luis Obispo, CA

Agricultural Peak Load Reduction Program

Program Description

IMPORTANT!!! Read this entire document carefully. It will answer most questions about eligibility and how the incentive grant payment is calculated and verified. Pay particular attention to the section Establishment of Pre- and Post-Project Peak Period kiloWatt Demand and the section Measurement and Verification Requirements.

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What is New?

Critical dates have been extended. The Agricultural Peak Load Reduction Program is now accepting applications until December 31, 2003. Projects must be commissioned by May 31, 2004. All pump efficiency tests must be completed by December 31, 2003.

The Program is not currently funding Category 3 or Category 4 projects. However, please contact the Grant Administrator if you have a project in mind. It is possible that funding may become available.

Because of the extension in critical dates, projects approved must now provide promised energy savings through September 30, 2004.

PROGRAM OVERVIEW

INTRODUCTION

Senate Bill 5x ("SB 5x") was enacted in April 2001 as urgency legislation in response to an imbalance in electricity supply and demand in the State. The goal of SB 5x is to reduce peak period electricity demand. The California Energy Commission, acting under authority of Section 5(b) of the legislation, has developed this Agricultural Peak Load Demand Program ("the Program").

The Agricultural Peak Load Demand Program will provide incentive grant payments ("grants") to the agriculture industry to install energy efficient hardware or make other conservation efforts in order to reduce peak period electricity demand.

"Peak Period" - for the purpose of this Program is defined as weekdays, excluding holidays, from 12:00 p.m. to 6:00 p.m. during the months of June through September.

"Reduced Electrical Demand" – this will be determined using one of two methodologies:

Method 1. This is the methodology used in the Energy Commission's previous Peak Demand Reduction Program. The peak load reduction formula is:

$$kW_{reduced} = (\text{System kWh Usage}_{\text{pre-project}} - \text{System kWh Usage}_{\text{post-project}}) / 6 \text{ hours}$$

Where:

$kW_{reduced}$ = the Reduced Electrical Demand used for calculating the grant.

System kWh Usage = average daily consumption of kilowatt-hours of affected /system(s) during the entire peak period from June through September with typical operating conditions.

Example 1: Before the project retrofit refrigeration equipment used an average 1,000 kilowatt-hours on weekdays between 12:00 noon and 6:00 PM From June through September. After the project retrofit the refrigeration equipment used only 800 kilowatt-hours between 12:00 noon and 6:00 PM. The difference of 200 kilowatt-hours is the reduction of electricity load during the peak period. Ddividing 200 kWh by the six hours of the peak period results in the average kW reduction of 33.33 kW. This is the amount of kW reduction the project can qualify for.

Method 2. This is based on instantaneous kW demand either measured directly or as it appears on your utility bills, and averaged over the six-hour peak period.

Example 2: A utility service meter measures energy use by several types of equipment in a food processing plant including fans, compressors, and lights. The project only modifies a fan. An electrician measures the individual load of the fan during the peak period before the project as 35 kW. He measures the load of the fan after the project as 15 kW. Since the fan is working throughout the peak period both before and after the project, the eligible kW reduction for that fan is 20 kW.

Example 3: The only equipment connected to a service meter is a water well used for irrigation. Utility billing records indicate an <u>average</u> 135 kW demand during the peak period. A change to the irrigation system allows this well to operate completely outside the peak period. Utility billing records after the project show no kW demand during the peak period. The project will qualify for a reduction of 135 kW.

IMPORTANT! Please note that the kiloWatt load is established by considering the <u>average conditions throughout the peak period</u>. The effect of this process is illustrated by the following example. Please

refer to the section ESTABLISHING CURRENT AND POST-PROJECT PEAK PERIOD KILOWATT DEMAND:

> *Example 4 - An irrigation pump with a 100 kW load operates 24 hours per day, every day throughout June and July. It does not operate at all in August and September. The current peak period load for the purposes of this program will be 50 kW, not 100 kW. This is because the pump does not operate 50% of the time during the peak period.*

PROGRAM CATEGORIES:

There are four categories of projects eligible for grants under this Program. Detailed descriptions of each are contained in this Program Description. The categories are:

- Category 1 - High Efficiency Electrical Equipment/Other Overall Electricity Conservation Efforts - within this category incentive grant payments are fully retroactive for projects started after January 1, 2001
- Category 2 - Pump Efficiency Testing and Retrofit/Repair
- Category 3 - Advanced Metering and Telemetry
- Category 4 - Retrofit of Natural Gas-powered Equipment to Alternative Fuels

OVERALL PROGRAM SCHEDULE

The anticipated Program schedule is:

- Announce Program June 1, 2001
- Begin accepting applications June 1, 2001
- Continue awarding grants on a first come-first served basis until all monies are encumbered.

WHO IS ELIGIBILE TO APPLY?

Applications for incentive grant payments under this Program can be made by any electric account that is classified as Agricultural by any utility plus the following business types:

- Water Agencies/Irrigation Districts - any public or private agency engaged in the delivery of water to agricultural water users and/or removal of water from agricultural land.
- Confined Animal Feeding Operations (poultry houses, hog farms, feed lots, dairies, rendering plants)
- Greenhouses/Nurseries
- Food processors and others handling or processing agricultural products or commodities
- Cold Storage or refrigerated warehouses used for agricultural commodities
- Agricultural and commodity non-profit organizations serving agricultural customers

THERE ARE NO GUARANTEES!

Each project submitted to this Program will go through different phases as described below. In all phases it is important to realize that neither the California Energy Commission nor the Grant Administrators provide any guarantees to the project applicants. Those that submit Program applications are not assured that their application will be accepted into the Program. Furthermore, even if a project is accepted, actual grant payments will depend on verified peak period load reduction and adherence to all other requirements of the Program.

SOME OTHER IMPORTANT FACTORS

There are other factors noted in the specific Program Category descriptions below. However:

- Except as noted in the specific Program Category description, this Program provides grant payments only for peak period reduction of existing, connected electrical demand.

- Except as noted in the specific Program Category description, grant payments will be made only upon verification of both construction and peak period demand reduction. This will require each applicant to sign an agreement to grant physical access to the project site by the Program administrators. Refer to the section Measurement and Verification Requirements below.

- This is a cost-sharing program. Except as noted in the specific Program Category description, grant payments will be made up to 65% of project cost. Further, no one business or corporate entity may receive more than $2 million dollars ($2,000,000) of incentive payments.

- There are limitations on the minimum project size in some cases (in terms of anticipated reduced peak period demand or size of equipment). Refer to the specific Program Category Descriptions.

- An application may include more than one project. All projects at one site should be included in one application but should be described on separate project proposal worksheets. If an applicant owns more than one site, or has control and legal authority to make decisions for more than one site, that applicant is encouraged to aggregate all sites into one application.

- The project must continue to provide peak period load reduction and/or efficiency improvements through September 30, 2004.

- The project must comply with all applicable environmental and contracting laws and regulations.

WHAT IS THE GRANT PAYMENT SCHEDULE?

Refer to the specific Program Category Description below, but generally:

For Category 1 and Category 3 projects - High Efficiency Electrical Equipment or Other Overall Conservation Efforts and Advanced Metering and Telemetry

- Projects completed by July 31, 2001 shall be awarded $350 per kilowatt for the average peak period demand reduction achieved.

- Projects completed after July 31, 2001 and before September 30, 2001 shall be awarded $300 per kilowatt for the average peak period demand reduction achieved.

- Projects completed after September 30, 2001 and before May 31, 2004 shall be awarded $250 per kilowatt for the average peak period demand reduction achieved.

For Category 2 projects - Pump Testing and Repair/Retrofit

- Pump testing - 80% of total test cost up to $200 per completed standard test (or up to $250 per test if the test requires two transects for velocity measurement) for an eligible pump (refer to the Program Category 2 Description for pump eligibility).

- Pump repair/retrofit - Up to 65% of the total cost. Three options are available for computation of the rebate amount. The most applicable option will depend upon the nature of the repair/retrofit and the quality of the pump efficiency test.

For Category 4 projects - Natural Gas-powered Equipment Retrofit

- Up to 65% of a project's cost to a maximum of $300,000 per project

Except as noted in the specific Program Category description, 50% of the estimated grant will be paid when the project is fully operational. The remaining grant payment will be paid after verification of the project's actual peak period demand reduction, generally requiring a full peak-period of operation (June through September).

Except as noted in the specific Program Category description, grant payments may be made up to 65% of project cost. Furthermore, no one business or corporate entity may receive more than $2 million dollars ($2,000,000) of incentive payments.

WHAT PROJECTS ARE NOT ELIGIBLE?

In addition to any specific requirements noted in the individual Program Category descriptions, the following will apply:

- California investor-owned electric utilities (IOUs) may not apply for grant funds and may not serve as a prime contractor. However, the IOUs may assist their customers in participating in the Program.

- Projects that have received funding under any other program funded by the Public Goods Charge fund (i.e. the IOUs' Standard Performance Contract and Express Efficiency programs) are not eligible

- Projects consisting solely of activities or actions by facility staff or other persons without some physical change to the equipment serviced by the meter are not eligible.

- Electricity generation or co-generation projects using fossil fuels are not eligible.

- Maintenance programs are not eligible.

- New construction projects are not eligible (eligible projects must be a retrofit, upgrade, or replacement of existing equipment which reduce existing load). Note that this does not exclude the construction of regulating/buffering reservoirs that store water from off-peak pumping.

- Fuel switching projects (i.e. shifting from electric power to diesel) are not eligible except as noted for Category 1 and Category 4 projects.

HOW IS PRIORITY OF PROJECT ACCEPTANCE DETERMINED?

Generally, projects will be considered for acceptance on a "first come-first served" basis. However, the Program administrators may exercise some discretion in accepting projects in order to meet legislative goals and make the best use of available funds. Projects will be evaluated in part using the following criteria:

- How soon the projected demand reductions can be achieved.
- The cost per kW peak period demand reduction, calculated by dividing the requested grant amount by the estimated peak period demand reduction.
- The constancy and reliability of the projected demand reductions.
- The applicant's previous experience with a particular project type.
- The probability that the project will succeed.
- The probability that the peak period demand reduction will continue in future years.
- The ability to verify demand reductions.
- Geographical region may be considered in order to ensure equity and effectiveness in managing blackout conditions.

NOTE ON CONFIDENTIALITY

Project applications shall not contain confidential information. Any material in an application that is marked confidential will be disregarded and returned immediately to the applicant. The application will be evaluated without the confidential material. All applications submitted to this Program will be public documents.

WHAT IS THE APPLICATION PROCESS?

Category 1, 3, and 4

The following steps describe the sequence of events from applying to the Program through receiving the final incentive grant payment:

1. Submittal of applications to the Grant Administrators - Public or private water agencies will direct their applications and questions to the Irrigation Training and Research Center at California Polytechnic State University. All other applicants will direct their proposals and questions to the Center for Irrigation Technology at California State University, Fresno. The Grant Administrator's addresses are listed on the cover of this Program Description.
2. Initial evaluation of applications for eligibility, technical, and administrative completeness by the Grant Administrator - Additional information, including a specified timeframe for response, will be requested if the application is not complete. If the requested information is not received within the specified timeline the application will be returned with no further processing.
3. Technical evaluation of the application to verify the accuracy of assumptions and calculations - There may be requests for more detailed information from applicants, again with a specified timeframe for response.

4. Final evaluation by the Grant Administrator - Please refer to the section HOW IS PRIORITY OF PROJECT ACCEPTANCE DETERMINED? For a listing of factors involved in project evaluation.

5. Grant contract, including Terms and Conditions of the grant mailed to successful applicants.

6. Applicant agrees to the grant contract - When the grant recipient is a water agency the recipient must provide a signed resolution, order, motion, or ordinance of the local governing body that by law has authority to enter into the grant award. This document must authorize the recipient to enter into the grant award and designate an authorized representative to execute all necessary agreements to implement and carry out the Terms and Conditions of the award.

7. Construction and commissioning of the project - Note that recipients may be required to submit monthly progress reports depending on the size of the project. Progress reports shall contain at a minimum the following information:

    a. Status of work, including an indication of overall progress compared to the expected schedule and goals.
    b. Any completed deliverables (projects) as identified in the grant award agreement.
    c. A comparison of project expenses to date compared to the budgeted amounts.

8. Verification of construction and operation by the Grant Administrator.

9. Payment of 50% of estimated incentive grant payment after completion of construction and full operations - Copies of all invoices, service contracts, personnel time records, and other relevant information to prove the final installation of the project, will be required.

10. Final grant payment after verification of the project's actual peak period demand reduction - This generally requires one full peak period of operation (June through September) after construction and operation. Note that the total of actual grant payments may be less than the estimated grant. The basic verification process consists of establishing an existing peak period demand and a post-project peak period demand.
    a. Existing – the existing demand can be established through:
        i. Historical metering data (i.e. from a Time-of-Use meter).
        ii. An engineering model accepted by the Grant Administrator.
        iii. Direct measurements of demand.
    b. Post-project – post-project demand will be verified through electric billing and other relevant documentation.

Category 2

This category has two different components:

1. Pump efficiency testing - This is a simple rebate program. Participating Pump Test Companies follow the specified pump efficiency testing requirements, and submit paperwork for a rebate. No prior approval by the Grant Administrator to the Pump Owner/Operator is needed. Pump Owners/Operators should contact a Participating Pump Test Company to obtain a pump efficiency test. A list of Participating Pump Test Companies is available on the CEC web site at www.energy.ca.gov/ag.

2. Pump repair/retrofit - Prior approval is required. Approval requires documentation of certain items. For final payment, additional documentation and verification is required. For water agencies, the program requirements can be found in the "Pump Repair/Retrofit Application – Water Agencies", through www.itrc.org/CECLoadReductionProgram.htm

FOR QUESTIONS AND FURTHER INFORMATION

If you have questions or need further information there are two options. First, contact one of the Grant Administrators. If you are a public water agency contact:

Irrigation Training and Research Center
California Polytechnic State University
San Luis Obispo, CA 93407
(805) 756-7408

All other individuals and entities should contact:

Center for Irrigation Technology
California State University, Fresno
5370 North Chestnut Avenue, M/S OF 18
Fresno, CA 93740-8021
(866) 297-3029

Also, more information is contained on the California Energy Commission's web site: www.energy.ca.gov/ag

DEFINITIONS

"Advanced metering" means at least a meter necessary for a time-of-use rate schedule or any other type of meter required for direct access under AB 1890 (1996), or a water flow meter with a volume totalizer.

" Agricultural producer or others pumping agricultural water" means a private firm, farmer-owned cooperative or individual involved in the production of agricultural crops and/or commodities. It also includes those engaged in animal agriculture including, but not limited to dairy farmers, poultry and egg producers, feedlot operators, swine production, aquacultural production and other integrated operators involved in the production of animal agriculture products, food processors and others handling or processing agricultural products or commodities.

" Agricultural water pumps" are those used to pump water for the production of agricultural crops or food products either owned and operated by agricultural producers or by water districts delivering water to agricultural producers.

" Alternative fuels" means all fuels, except unmodified diesel, gasoline or natural gas, that are legally permissible to use either under a valid air permit from an air quality management or air pollution control district or without a permit if such use is allowed without a permit under district rules.

"Service meter" means the location where demand is measured.

"Started" for the purposes of defining an eligible Category 1 project due to retroactivity means that issuance of any and all purchase orders for equipment and/or installation of equipment for a project occurred on or after January 1, 2001. For all other projects, this refers to the date that the project is approved for a grant.

"Telemetry" means sensor and control equipment (also known by the acronym SCADA) and software that will allow remote control of other equipment.

"Time-of-use meter" means a service meter capable of recording time and load of electrical use.

"Water agency" means those agencies (public or private) engaged in the delivery of water to agricultural water users and/or removal of water from agricultural lands.

PROGRAM CATEGORY DESCRIPTIONS

The following discussions explain each Project Category in this Program. Each discussion provides examples of the types of Projects eligible in each category as well as how grant payments will be calculated.

IMPORTANT! – The current and post-project peak period kiloWatt load must be established for Category 1 and Category 3 projects. Also, there are measurement and verification requirements associated with each category. Each Category 1 and Category 3 each project application must include a measurement and verification plan. Please read the following sections carefully.

ESTABLISHING CURRENT AND POST-PROJECT PEAK PERIOD KILOWATT DEMAND

The Basis of Grants Under this Program

One of the main purposes of the Program is to reduce on-peak electrical energy use. Specifically, grants under Project Categories 1 and 3 are calculated based on a reduction in average kiloWatt demand during the peak period. That is, the grant is based on the existing "average kiloWatt demand during the peak period" (before the project) compared to the "average kiloWatt demand during the peak period" after the project is complete and operating.

This section does three things:

1. Explains the meaning of the term "average kiloWatt demand during the peak period".
2. Provides examples of how "average kiloWatt demand during the peak period" is calculated
3. Describes what may be required as supporting documentation to the calculations of "average kiloWatt demand during the peak period".

Definitions

- The "peak period" is defined as the sum of all hours between 12:00 noon and 6:00 PM, on Mondays through Fridays, during June, July, August, and September. This is approximately 522 hours. The actual number of hours depends on the specific calendar year.
- "Average kiloWatt demand during the peak period" can be calculated in a number of ways depending on the amount and type of data available. However, note the following important concept:

The term "Average kiloWatt demand during the peak period" implies an averaging of kiloWatt demand across the entire peak period (522 hours).

Examples of calculating "Average kiloWatt demand during the peak period"

The following examples should demonstrate this concept and show some of the ways that the "Average kiloWatt demand during the peak period" can be calculated:

1. A pump creates a load of 200 kW. The pump is fully-loaded and operated during all peak period hours from June through September. In this case, the average kiloWatt demand during the peak period is 200 kW, since the pump operates 100% of the time during the peak period.

2. A pump creates a load of 200 kW. The pump is fully-loaded and operated during all peak period hours for the month of June only. In this case, the average kiloWatt demand during the peak period is 50 kW, since the pump only operates ¼ of the entire peak period (i.e. ¼ of 200 kW = 50 kW).

3. A pumping station consists of three different sized pumps and creates a variable load ranging from 50 to 300 kW. Utility billing records indicate 75,000 kiloWatt-hours used during the entire peak period. The average kiloWatt demand during the peak period (assuming 522 hours in that period) is 143.7 kW (i.e. 143.7 kW = 75,000 kWh / 522 hours).

4. A pumping station consists of three different sized pumps and creates a variable load ranging from 50 to 300 kW. Utility billing records do not indicate total kiloWatt-hours used during the peak period. However, the utility billing shows an actual demand (sometimes called "created demand") of 65 kW for June, 250 kW for July, 180 kW for August, and 110 kW for September. It can be established that this pumping station operated 100% of the time during the peak period in all months. The average kiloWatt demand during the peak period is 151.3 kW (151.3 = (65 + 250 + 180 + 110) / 4).

5. A pumping station consists of three different sized pumps and creates a variable load ranging from 50 to 300 kW. Utility billing records do not indicate total kiloWatt-hours used during the peak period. However, the utility billing shows an actual demand (sometimes called "created demand") of 65 kW for June, 250 kW for July, 180 kW for August, and 0 kW for September. It can be established that this pumping station operated 100% of the time during the peak period in June, July, and August. The average kiloWatt demand during the peak period is 123.8 kW (123.8 = (65 + 250 + 180 + 0) / 4).

6. A pumping station consists of three different sized pumps and creates a variable load ranging from 50 to 300 kW. Utility billing records do not indicate total kiloWatt-hours used during the peak period. However, the utility billing shows an actual demand (sometimes called "created demand") of 65 kW for June, 250 kW for July, 180 kW for August, and 0 kW for September. It can be established that this pumping station operated only half of the time (50%) during the peak period in June, July, and August. The average kiloWatt demand during the peak period is calculated as 61.9 kW (61.9 = (65 + 250 + 180 + 0) * .5 / 4).

7. A facility's utility billing indicates 125,000 kiloWatt-hours energy use during the months of June through September. Facility operating records indicate that none of this use occurred on weekends, and that the average workday was from 6:00 AM to 6:00 PM, Monday through Friday (twelve hours a day). It is assumed that half of the energy use occurred during the peak period and that the total hours in the peak period is 522. Thus, the average kiloWatt demand during the peak period is calculated as 119.7 kW (119.7 = .5 * 125,000 / 522)

Note that the "Average kiloWatt demand during the peak period" estimated for the current conditions and the after-project conditions must identify the impact of the project.

Required Supporting Documentation

An application for a grant must be accompanied by supporting documentation for estimation of both the existing and the after-project average kiloWatt demand during the peak period. This documentation may include (but is not limited to):

1. Utility billing records that directly show on-peak kiloWatt-hour usage and/or kiloWatt demand. This would occur if the equipment is currently on a time-of-use rate schedule.

2. Utility billing records that show total kiloWatt-hour usage and/or kiloWatt demand, in conjunction with facility operating records or time-stamped measurements that establish the amount of use during the peak period.

3. An acceptable engineering model that estimates kiloWatt-hour energy use, in conjunction with facility operating records or time-stamped measurements that establish the amount of use during the peak period. Engineering models have been used to help establish heat loss through non-insulated versus insulated liquid storage tanks, energy use reductions through use of a variable speed drive, energy use reductions through improvements to an irrigation system, and energy use reductions through changes in lighting. An acceptable engineering model uses the laws of science, applied correctly, in conjunction with accepted measurements of/standards for various material, agronomic, and climatic factors.

4. Measurements of the kiloWatt-hour energy use and/or kiloWatt demand of individual equipment, in conjunction with facility operating records or time-stamped measurements that establish the amount of energy use during the peak period. This might be particularly important in facilities with several types of electrical load on the same service meter (for example, a refrigerated warehouse with refrigeration equipment, lighting, and materials handling equipment).

5. Manufacturer's equipment ratings, in conjunction with facility operating records or time-stamped measurements that establish the amount of energy use during the peak period. This may be particularly important for lighting, roofing, and insulation projects where industry standards have been well-established.

MEASUREMENT AND VERIFICATION REQUIREMENTS

Accurate measurement and verification of the results of a project are essential for proving the effectiveness of the Program and ensuring that public monies are utilized correctly. It is the Applicant's responsibility to propose a viable and accurate measurement and verification plan as part of the project. The Energy Commission retains full discretion for determining whether or not a proposed measurement and verification plan is sufficient.

Category 1 and 3 Projects

The incentive grant payment for Category 1 and 3 projects is based on a comparison between the current peak period kW demand and the after-project peak period kW demand. The simplest projects will involve situations where only one piece of equipment is connected to the service meter and the service meter is a time-of-use meter (capable of measuring loads and segmenting them by time periods). Thus, verification may be simply a matter of inspecting the utility bills before and after the project.

More complex projects will involve several types of equipment, all with variable and different operating schedules and characteristics, connected to a single service meter. For these projects, possibly only one or two of the demands are modified. The problem is to isolate the effects of those modifications.

Note that there are two available methodologies for identifying peak period demand. They are identified in the Introduction section of the Program Overview. Also, please refer to the section ESTABLISHING CURRENT AND POST-PROJECT PEAK PERIOD KILOWATT DEMAND for guidance**.**

It is the Applicant's responsibility to both accurately identify the existing peak period demand and propose a feasible and accurate plan for identifying the after-project peak period demand for the equipment affected by the project proposal. This may involve inspection of utility billing records, energy audits by experienced and knowledgeable companies, or installation of specialized instrumentation. The most recent available data should be used for the application. Thus, if peak-period data is available for 2001, do not use peak-period data for

2000 unless there is a compelling reason to do so (i.e. "year 2000 data are more representative of normal operations because…").

Installing time-of-use meters may be required as a condition for project acceptance.

Category 2 Projects

Measurement and verification of Category 2 projects may (depending upon the rebate computation method used) require accurate measurement of energy use for the peak period months prior to or after the pump repair/retrofit. Thus, if there are multiple pumps on a service meter, the applicant may need to propose a viable method for having determined how much energy each pump is using.

Depending on which option for calculating the incentive is used, multiple pump tests may be required. For water agencies, the program requirements can be found in the "Pump Repair/Retrofit Application – Water Agencies", through www.itrc.org/CECLoadReductionProgram.htm

Category 4 Projects

Measurement and verification for Category 4 projects will require that operation of the installed equipment be observed. It is expected that the installed equipment will be in place to at least March 31, 2004.

For all Projects

Contractors/Grantees will be required to provide access to facilities where demand-reducing measures have been installed and/or implemented and by providing associated records. If the contractor/grantee is not the final recipient of demand-reducing equipment, the contractor/grantee must ensure the ultimate recipient fulfills this obligation. Thus, this obligation passes down to subcontractors. Evaluation activities may occur from the time that the agreements are executed until March 31, 2004 (September 30, 2004 for projects approved after December 31, 2003).

The Energy Commission or the Measurement and Verification (M&V) contractor may inspect the sites prior to installation of measures to establish existing conditions and may inspect the sites after installation to verify installations. The Energy Commission or the M&V contractor may install monitoring equipment at either of these times.

The Commission's M&V contractor will randomly audit a sample of sites where peak reduction measures have been installed or implemented to verify that the contractor's/grantee's actually achieved the peak energy savings that they claimed in their application. The M&V contractor may also be asked to investigate why the actual results differed significantly from the engineering estimates of peak savings.

Participants must provide all information necessary for an independent M&V reviewer to reproduce the estimated demand reduction. The contractor/grantee must have the following documentation available for review and use by the Energy Commission and the Energy Commission's M&V contractor. This documentation can be the same as used in the application if it reflects the actual installations. All contractors/grantees are expected to provide the following information to the Energy Commission and/or the M&V contractor:

- Lists of customers (if applicable), project site addresses, project types and incentives
- An estimate of the connected load for all systems (fans, lights, refrigeration equipment, pumps, communication and control systems, etc.) that existed in each participating site before any new equipment was installed.

- An inventory of equipment and associated hardware, as installed, to reduce peak load. The inventory shall include the brand, model numbers, performance data of the old and the new systems.

- Where applicable, a complete description of the newly installed control or energy management systems, the range of both manual and automatic control strategies identified for the customer, and the electrical equipment controlled by the system(s). Required documents will include the controlled systems' electrical ratings (in kW), control diagrams, operating manuals, and commissioning reports.

- Where applicable, an estimate or records of what fraction of the sites actually took a curtailment action in response to a signal/curtailment request.

- Records of downtimes

Category 1 - High Efficiency Electrical Equipment/Other Overall Conservation Efforts

Important! - incentive grant payments within this category are fully retroactive for projects started after January 1, 2001

Projects in this category will involve the installation of high-efficiency electrical equipment and other energy conservation efforts for agricultural operations. An eligible project can include replacing or modifying equipment. Such equipment includes, but is not limited to, lighting, refrigeration or cold storage equipment, insulating materials or systems, energy efficient greenhouse panels or materials, energy-efficient electric farming or food processing equipment, irrigation systems and irrigation system management, pump and motor replacement (except agricultural water pumps which fall under Category 2 projects), biogas systems at food processing facilities, and other equipment or facilities (i.e. water storage reservoir) that result in quantifiably reduced electrical energy consumption during peak periods. Project costs can include engineering and design, equipment purchase and installation, equipment commissioning and testing, and programming changes to the software of control systems.

To qualify for the incentive for motor replacement the new motor has to be rated "High Efficiency Premium".

Please note that equipment required for participation in demand-responsiveness programs (such as the California Independent System Operator's Demand Response Programs), that provides information required to reduce peak period loads (such as a water meter), or that allows for remote operation of equipment in order to reduce peak loads will be considered under Category 3 projects.

Eligible Applicants

Refer to WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW.

Project Eligibility and other Factors

In addition to eligibility requirements listed in WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW:

- Eligible projects must reduce peak period electricity demand and be on a site that is owned or operated by the eligible applicant.

- Projects within this category are eligible if started on or after January 1, 2001. "Started" for the purposes of defining an eligible project due to retroactivity means that issuance of any invoices for equipment purchased and installed are dated on or after January 1, 2001.

- Projects must be fully operational by May 31, 2004.

- Each project application must indicate a peak period demand reduction of at least 10 kW. Note however that more than one site can be aggregated on an application. This requirement may be waived for certain projects including:
  - installation of variable frequency drives in diary parlor vacuum systems
  - installation of high efficiency motors
  - installation of high efficiency lighting

- Switching an end use from electricity to natural gas, propane, bio-fuels and renewable energy sources may qualify for an incentive when the system operates so that:

SPFC * HPfossil / HPelectric <= 8200

Where:

SPFC = specific fuel consumption of the internal combustion engine expressed as BTU/Horsepower-Hour
HPfossil = required input horsepower of the fossil-fueled system
HPelectric = required input horsepower of the electric-powered system

The term "system" in this sense refers to the equipment needed for the fossil-fueled system to completely replace the electric-powered equipment. For example, an internal combustion engine, driveshaft, and right-angle gearhead would be required to replace an electric motor on a water well.

Level and Schedule of Incentive Grant Payment

- Projects completed and operational by July 31, 2001 shall be awarded $350 per kilowatt for the average peak period demand reduction achieved.
- Projects completed and operational after July 31, 2001 and before September 30, 2001 shall be awarded $300 per kilowatt for the average peak period demand reduction achieved.
- Projects completed and operational after September 30, 2001 and before May 31, 2004 shall be awarded $250 per kilowatt for the average peak period demand reduction achieved.

Notwithstanding the above, no incentive grant payment will be for more than 65% of the project cost. And, no individual or corporate/business entity will be entitled to more than $2,000,000 of incentive payments.

50% of the estimated grant payment will be paid upon verification of an operational project. The remaining payment, based on verified peak period load reduction will be paid after one full peak period (June through September) of operation.

Examples of Grant Payment Calculations

Example A:

Project costs are $30,000, thus the maximum grant is 65% of this, or $19,500.
Verified peak period load reduction is 75 kW.
The project was completed and operational before July 31, 2001.

Grant from kW reduction = $350/kW * 75 kW = $26,250

However, since the maximum grant is $19,500 (65% of the project cost), the actual grant payment is $19,500.

Example B:

Project costs are $60,000, thus the maximum grant is 65% of this, or $39,000.
Verified peak period load reduction is 75 kW.
The project was completed and operational after July 31, 2001 and before September 30, 2001.

Grant from kW reduction = $300/kW * 75 kW = $22,500

Since this is less than the maximum allowable, the actual grant payment is $22,500.

Application Process

1. Fill out the Application Form completely and as instructed. Note the requirements for the project explanation, engineering analysis, establishment of the current peak period kW demand, estimation of post-project peak period kW demand, measurement and verification plan, and project budget. If there is more than one project on an application list the data for each on a separate Project Proposal Work Sheet.

2. If you are a public water agency send the form to:

   Irrigation Training and Research Center
   California Polytechnic State University
   San Luis Obispo, CA 93407
   (805) 756-7408

   All other individuals and entities should contact:

   Center for Irrigation Technology
   California State University, Fresno
   5370 North Chestnut Avenue, M/S OF 18
   Fresno, CA 93740-8021
   (866) 297-3029

3. You will be contacted if any further information is required.

4. You will be contacted when the application is accepted or rejected. If accepted you will have to sign an agreement between yourself and the Grant Administrator that specifies the terms of the grant including the scope of work, critical dates, and the means by which demand reductions will be verified and the actual grant calculated.

5. You will contact the Grant Administrator when the project is completed and operational.

6. The Grant Administrator may arrange for an on-site visit to verify project completion and operation.

7. 50% of the estimated grant payment will be made.

8. You will contact the Grant Administrator after the first full peak period (June through September) of operation, or after the arranged time period, and arrange for all required documentation to verify peak period load reductions.

9. Upon verification, the final grant payment will be calculated and made.

Category 2 - Pump Testing and Retrofit/Repair

This category provides grants for the testing of agricultural water pumps to determine efficiency and for pump repairs and retrofits to improve pump efficiency.

Grants will be made for pump repairs, pump bowl/impeller lining, motor or pump replacement and other actions to improve pump efficiency (not to include motor rewinding, unless it is necessary for proper operation of a VFD control). Also, well cleaning that reduces draw down and removal/replacement of valves and fittings with high-pressure losses will be considered. To qualify for the incentive for motor replacement the new motor has to be rated "High Efficiency Premium".

Efficiency improvement work can be contracted or performed wholly or partially in-house if such capability exists. For purposes of grant limit, in-house rates cannot exceed typical rates charged by pump repair contractors.

Eligible Applicants

Refer to WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW.

Project Eligibility and other Factors

In addition to eligibility requirements listed in WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW:

- Pump must be used for agricultural water pumping and must be operational at the time of application (that is, be able to pump water).

- Participation in the pump efficiency-testing category is limited to one test per individual pump per year.

- Pump efficiency tests must be performed by a participating pump test company or qualified staff of a water agency. A list of participating pump test companies is available through the Grant Administrators.

  (http://cati.csufresno/cit/load_reduction or www.itrc.org/CECLoadReductionProgram.htm)

  If your preferred pump test company is not included in this list, request the company to contact the Grant Administrator at the Center for Irrigation Technology at (866) 297-3029.

- A pre- and a post-repair/retrofit test may be required for a pump participating in the repair/retrofit aspect of this category depending on how the grant payment is to be calculated. The cost of the post-repair test will be considered as part of the repair/retrofit cost.

- A copy of some of the pump test data and results, excluding owner/operator name in the case of individual farmers, will be forwarded to the Program Manager. This will include the pumping system horsepower, pump type, flow rate, and overall pumping plant efficiency as well as other information. For water agency programs, see the detailed requirements found in the “Pump Repair/Retrofit Application – Water Agencies”, found in www.itrc.org/CECLoadReductionProgram.htm

- A subsequent pump repair is not required for a grant payment for pump testing.

- All efficiency tests must be completed before December 31, 2003.

- All pump repair/retrofit projects must be completed and operational by May 31, 2004.

- There is no retroactivity to January 1, 2001 in this category. However, for the purposes of calculating the grant payment, any invoice issued after the date of project acceptance will be considered.

Level and Schedule of Incentive Grant Payment

The program incentives are divided into two separate elements:

1. Pump testing – 80% of the cost of the test up to a maximum of $200 per standard test and up to a maximum of $250 if the test requires two transects in order to measure velocity. Note that the incentive payment is made directly to the pump tester unless the tests are conducted by in-house personnel.

2. Pump Repairs and Retrofitting – there are three methodologies available for determining the grant payment for a pump repair/retrofit:

   a. up to 65% of the repair/retrofit costs at the rate of $.10/kWh energy-use reduction based on twelve months of operation and the ratio of before-repair to after-repair overall pumping plant efficiency, as:

   $$\text{Grant} = .10 * (kWh_{annual} - (kWh_{annual} * \text{pre-repair OPE} / \text{post-repair OPE}))$$

   Where:

   KWh_{annual} = 12 months of energy use prior to or after at the discretion of the applicant.
   OPE = Operating Plant Efficiency as tested.

   b. up to 65% of the repair/retrofit costs at the rate of $.10/kWh energy-use reduction based on twelve months of operation and the difference between before-repair and after-repair kilWatt-hours per acre-foot of water pumped (as determined by a pump efficiency test), as:

   $$\text{Grant} = .10 * (AF_{annual} * (\text{pre-repair kWh/AF} - \text{post-repair kWh/AF}))$$

   Where:

   AF_{annual} = acre-feet of water pumped in 12 months
   KWh/AF = kiloWatt-hours required to pump an acre-foot of water through the system as determined by a pump efficiency test

   c. up to 65% of the repair/retrofit costs at the rate of $.10/kWh energy-use reduction based on 25% of twelve months of operation, as:

   $$\text{Grant} = .10 * .25 * kWh_{annual}$$

   Where:

   KWh_{annual} = 12 months of energy use prior to or after at the discretion of the applicant.

To account for applicants who might not have utilized a pump in the last year, applicants have a choice for KWh_{annual} in the equation above. Applicants can use the 12 months kWh usage prior to the pump repair or estimate the 12 months' kWh usage after the pump repair. If estimating the next 12 months' usage, the applicant should explain how this was done in the application.

For either pump testing or pump repair/retrofit, no individual or corporate/business entity will be entitled to more than $2,000,000 of incentive payments.

For public water agencies, details of the options and application forms can be found under "Pump Repair/Retrofit Rebate Application – Water Agencies", on the web page www.itrc.org/CECLoadReductionProgram.htm

Examples of Grant Payment Calculation

Example A:

Pre-repair/retrofit pumping plant efficiency is tested at 45%.
After repair/retrofit pumping plant efficiency is tested at 62%.
Billing data indicates 70,000 kilowatt hours were used in the first peak period after the repair/retrofit.
The repair costs $1,500. 65% of $1,500 = $975, which is the maximum grant for this project.

The initial grant payment is calculated as:

Grant = .10 * (70,000 – (70,000 * 45/ 62)) = $1,919

However, since $975 is the maximum allowable payment, the grant is $975.

Example B:

Pre-repair/retrofit pumping plant efficiency is tested at 45%.
After repair/retrofit pumping plant efficiency is tested at 62%.
Billing data indicates 70,000 kilowatt hours were used in the 12 months after the repair/retrofit.
The repair costs $4,000. 65% of $4,000 = $2,600, which is the absolute maximum grant for this project.

The initial grant payment is calculated as:

Grant = .10 * (70,000 – (70,000 * 45/ 62)) = $1,919

Since this is less than the maximum grant permissible, the grant is $1,919

Application Process

- For Pump Efficiency Testing

  i. Contact a participating pump test company. A list of participating pump test companies is at:

  (http://cati.csufresno/cit/load_reduction, www.itrc.org/CECLoadReductionProgram.htm), or www.energy.ca.gov/ag

  IMPORTANT! Neither the Program Manager nor the Grant Administrators guarantees the accuracy of the pump test. The performance of the service provided is the sole responsibility of the pump test company.

  ii. This category may also be offered through public water agencies. In this case it is expected that the water agency will apprise qualified customers of the application process.

  iii. Arrange for and have the test completed.

  iv. The tester will provide you with a copy of the results and forward a confirmation of the test, including some test data, to the Grant Administrator

v. Payment will be made directly to the pump tester, or the public water agency.

- For Pump Repair/Retrofit

i. Arrange for and have a pump efficiency test completed as per above, if you are going to use Option 1 or Option 2 to calculate your grant.

ii. The tester will provide you with a copy of the results and forward a confirmation of the test, including some test data, to the Grant Administrator.

iii. Payment for the pump test will be made directly to the pump tester, or the public water agency.

iv. Fill out the Application Summary Form as instructed. Use the special Category 2 Project Proposal Worksheet, one for each pump repair/retrofit in the application.

IMPORTANT! You can call the Grant Administrator in order to establish an approval date. The approval date is critical to the actual incentive grant payment since no invoices dated before the approval date will be considered for a grant payment.

v. For public water agencies, applications can be obtained at: http://www.itrc.org/CECLoadReductionProgram.htm) or by contacting the grant administrator:

Irrigation Training and Research Center
California Polytechnic State University
San Luis Obispo, CA 93407
(805) 756-7408

All other individuals and entities should contact:

Center for Irrigation Technology
California State University, Fresno
5370 North Chestnut Avenue, M/S OF 18
Fresno, CA 93740-8021
(866) 297-3029

vi. You will be contacted if any further information is required.

vii. You will be contacted when the application is accepted or rejected. If accepted you will have to sign an agreement between yourself and the Grant Administrator that specifies the terms of the grant including the scope of work, critical dates, and the means by which demand reductions will be verified and the actual grant calculated.

viii. You will contact the Grant Administrator when the project is completed and operational.

ix. As the pump is operational, arrange for another pump efficiency test if required by the terms of the agreement.

x. If required by the agreement, at the end of the first full year of operation, send a copy of the metering data and invoices to the Grant Administrator. Payment will be made according to the formula chosen.

Requirements for Pump Efficiency Tests

Pump tests can provide valuable information regarding pumping plant efficiencies and power consumption. However, their value is dependent upon the quality of the measurements and computations. Minimum requirements for pump efficiency tests for water agencies are described in a separate document entitled "Pump Efficiency Test Rebate Information Packet – Water Agencies" and is available on the web at **www.itrc.org/CECLoadReductionProgram.**

Category 3 - Advanced Metering and Telemetry

IMPORTANT – as of August 28, 2002, no funding was available for this category. However, please contact the Grant Administrator if you have a project in mind.

This Program category provides grants to agricultural producers and water agencies to encourage the purchase and installation of advanced metering and telemetry equipment in order to improve load management and demand responsiveness techniques particularly applicable to this sector. Projects in this category may also assist grantees in participating in other demand reduction programs.

Applications may be proposals for installation of advanced electrical and water metering, or telemetry, or both.

Eligible Applicants

Refer to WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW.

Project Eligibility and other Factors

- Projects may involve the purchase of equipment necessary to participate in an approved voluntary demand responsiveness program offered by the California Independent System Operator and Investor Owned or Municipal Utilities. Measurement and verification of load reduction is not required if an applicant demonstrates participation in such a program and the equipment installed is specifically needed to enable participation.

- There is no retroactivity to January 1, 2001 in this category. However, for the purposes of calculating the grant payment, any invoice issued after the date of project acceptance will be considered.

Level and Schedule of Incentive Grant Payment

- Projects completed by July 31, 2001 shall be awarded $350 per kilowatt for the average peak period demand reduction achieved.

- Projects completed after July 31, 2001 and before September 30, 2001 shall be awarded $300 per kilowatt for the average peak period demand reduction achieved.

- Projects completed after September 30, 2001 and before May 31, 2004 shall be awarded $250 per kilowatt for the average peak period demand reduction achieved.

Notwithstanding the above, no incentive grant payment will be for more than 65% of the project cost. And, no individual or corporate/business entity will be entitled to more than $2,000,000 of incentive payments.

50% of the estimated grant payment will be paid upon verification of an operational project. The remaining payment, based on verified peak period load reduction will be paid after one full peak period (June through September) of operation.

Examples of Grant Payment Calculations

Example A:

Project costs are $30,000, thus the maximum grant is 65% of this, or $19,500.
Verified peak period load reduction is 75 kW.

The project was completed and operational before July 31, 2001.

Grant from kW reduction = $350/kW * 75 kW = $26,250

However, since the maximum grant is $19,500 (65% of the project cost), the actual grant payment is $19,500.

Example B:

Project costs are $60,000, thus the maximum grant is 65% of this, or $39,000.
Verified peak period load reduction is 75 kW.
The project was completed and operational after July 31, 2001 and before September 30, 2001.

Grant from kW reduction = $300/kW * 75 kW = $22,500

Since this is less than the maximum allowable, the actual grant payment is $22,500.

Example C:

Project costs are $12,000, thus the maximum grant is 65% of this, or $7,800.
The equipment is needed to participate in the California ISO's Demand Responsiveness Program (DRP).
The equipment is installed on a water well with a peak period load of 65 kW.
The project was completed and operational after September 30, 2001 and the applicant has a contract with the California ISO DRP.

Grant from kW reduction = $250/kW * 65 kW = $16,250

Since this is more than the maximum allowable, the actual grant payment is $7,800.

Application Process

1. Fill out the attached application form as instructed. Identify if the project is connected to participation in a voluntary load-curtailment program such as the California ISO Demand Response Program. Note the requirements for project explanation, engineering analysis, establishment of the current peak period kW demand, estimation of post-project peak period kW demand, and project budget.

2. If you are a water agency send the form to:

   Irrigation Training and Research Center
   California Polytechnic State University
   San Luis Obispo, CA 93407
   (805) 756-7408

   All other individuals and entities should contact:

   Center for Irrigation Technology
   California State University, Fresno
   5370 North Chestnut Avenue, M/S OF 18
   Fresno, CA 93740-8021
   (866) 297-3029

3. You will be contacted if any further information is required.

4. You will be contacted when the application is accepted or rejected. If accepted you will have to sign an agreement between yourself and the Grant Administrator that specifies the terms of the grant

including the scope of work, critical dates, and the means by which load reductions will be verified and the actual grant calculated

5. You will contact the Grant Administrator when the project is completed and operational.

6. The Grant Administrator will arrange for an on-site visit to verify project completion and operation.

7. If the project is associated with participation in an approved voluntary load-curtailment program, 100% of the grant payment will be made if a contract with the program sponsor is presented. Otherwise, 50% of the estimated grant payment will be made.

8. You will contact the Grant Administrator after the first full peak period (June through September) of operation and arrange for all required documentation to verify peak period load reductions.

9. Upon verification, the final grant payment will be calculated and made.

Category 4 - Retrofit of Natural Gas-Powered Equipment to Alternative Fuels

IMPORTANT – as of August 28, 2002, no funding was available for this category. However, please contact the Grant Administrator if you have a project in mind.

This Program category provides grants to private agricultural producers, handlers, water agencies and processors for projects that reduce California' s demand for natural gas. Specifically this category is intended to aide in the retrofit of natural gas-powered equipment so that they can run on an alternative fuel. An eligible project can include replacing or retrofitting equipment. Such equipment includes but is not limited to piping, tanks, pumps, burners, burner accessories, and telemetry equipment.

IMPORTANT! The term "alternative fuels" means all fuels, **except unmodified diesel, gasoline, or natural gas**, that are legally permissible to use either under a valid air permit from an air quality management or air pollution control district or without a permit if such use is allowed without a permit under district rules.

Eligible Applicants

Refer to WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW.

Project Eligibility and other Factors

In addition to eligibility requirements listed in WHO IS ELIGIBLE TO APPLY in the PROGRAM OVERVIEW:

- The project must be on a site that is owned or operated by the eligible applicant.
- The site must be a place where the natural gas-powered equipment is located.
- The site cannot be strictly an administrative location.
- There is no retroactivity to January 1, 2001 in this category. However, for the purposes of calculating the grant payment, any invoice issued after the date of project acceptance will be considered.

Level and Schedule of Incentive Grant Payment

Incentive grant payments will be for 65% of the project costs up to a maximum of $300,000 per project. And, no individual or corporate/business entity will be entitled to more than $600,000 of incentive payments.

The grant payment will be paid upon verification of an operational project.

Examples of Grant Payment Calculations

Example A:

Project costs are $30,000, thus the grant is 65% of this, or $19,500.

Example B:

Project costs are $800,000. 65% of $800,000 is $520,000. However, there is a maximum payment of $300,000 for any one project. Thus, the grant is for $300,000.

Application Process

1. Fill out the attached application form as instructed. Note the requirements for project description, equipment list, plot plan, engineering analysis, and project budget.

2. If you are a water agency send the form to:

   Irrigation Training and Research Center
   California Polytechnic State University
   San Luis Obispo, CA 93407
   (805) 756-7408

   All other individuals and entities should contact:

   Center for Irrigation Technology
   California State University, Fresno
   5370 North Chestnut Avenue, M/S OF 18
   Fresno, CA 93740-8021
   (866) 297-3029

3. You will be contacted if any further information is required.

4. You will be contacted when the application is accepted or rejected. If accepted you will have to sign an agreement between yourself and the Grant Administrator that specifies the terms of the grant including the scope of work, critical dates, the means by which the project completion will be verified, and the actual grant calculated.

5. You will contact the Grant Administrator when the project is completed and operational.

6. The Grant Administrator will arrange for an on-site visit to verify project completion and operation.

7. The full grant payment will be made upon verification of operation.